

Using Remotely Sensed Sea Surface Temperature Data to Track Movement of the Juan de Fuca Eddy in Association with Pacific Northwest Coast Harmful Algal Blooms

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Abstract

Satellite remote sensing techniques are being used to study the initiation and movement of harmful algal blooms off the coast of Washington State, through ocean-feature tracking and analysis. Sea surface temperature data is acquired through the Advanced Very High Resolution Radiometer instrument aboard NOAA weather satellites, and is used to delineate the Juan de Fuca eddy and track the motion of its cold-water masses, which have been associated with elevated levels of the biotoxin domoic acid. Domoic acid poisoning is a health and economic concern for the coastal communities of Washington, causing frequent closures of shellfish harvesting activity. Blooms of the phytoplankton that produce domoic acid, *Pseudo-nitzschia* spp., are thought to form west of the Strait of Juan de Fuca in this semi-permanent eddy bordering Washington and British Columbia, before being transported ashore onto Washington beaches. Remote-sensing analysis methods are being used along with oceanographic modeling and *in-situ* sampling to develop an understanding of the mechanisms that initiate and transport *Pseudo-nitzschia* cells and domoic acid to the Washington coast. The long-term research goal is development of a forecasting tool for predicting and monitoring future bloom occurrences.